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AUTHOR Short, Edmund C.
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ABSTRACT

In order to develop and implement new governmental policies in educational research and development (R&D) which meet the needs of R&D specialists and the concerns of the public, it is important to understand the complexity of the research-development-knowledge utilization cycle and to develop a strategy which serves the public interest but reserves to the R&D specialists those decisions and technical activities which only they can adequately carry out. The guidelines of such a strategy are that a) a philosophy of the government's role in R&D should be developed and promulgated through appropriate legislation; b) a permanent secretariat, responsible for developing and implementing the role statement formulated, should be established by legislation; c) the educational R&D community should be granted financial assistance at the local, state, regional, and national levels to establish its initial organization and governing procedures, for the determination of its priorities, for the identification of continuing sources of revenue for the support of research, and for the dissemination of the results of R&D work; d) each R&D institution should receive unencumbered grants of money for allocation to specific knowledge-producing project applicants; e) a system by which knowledge can be readily communicated to the practitioner should be developed; and f) no policies should be set which diminish the effort that has to be given to studies related to the ongoing operation of particular systems or programs. (HMD)

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TASKS OF TECHNICAL AND PUBLIC POLICY EXPERTS IN EDUCATIONAL R & D

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by
Edmund C. Short
Associate Professor of Education
The Pennsylvania State University

Goals and public policy for research and development in the field of Education are rightfully matters for public deliberation and choice in our society. In coming to a wise decision on such issues, the viewpoints of at least two disparate interests must be accommodated: 1) those of the technical experts who know the potential and the limitations of research and development in Education, and 2) those of the public, which reflect certain expectations and capability for achieving them. An accurate picture of the dimensions of the public's viewpoint in this regard requires just as much study as the viewpoints obtained from the technical experts in research and development in Education.

It should be no surprise to learn that it is almost as difficult for educators and scholars studying educational problems to recommend clear-cut research and development priorities in Education as it is for public officials or bureaus to do so. The fact is that the research and development community in Education has never formally sought or come to a consensus on what research questions or development projects require the most urgent attention. This is in part due to its lack of organizational unity as a profession and the complexity of educational problems which must be examined, and in part due to the absence of the opportunity, at least until recently, to participate in public policy decisions in any

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other way than by giving testimony as individual experts. Under these circumstances, mounting a consensus from within the profession did not seem critical nor worthy of commitment of the necessary time and energy.

With a few years of both federal and state funding of limited educational research and development work behind us, it is possible for the technical experts in this field to reflect on the consequences of the priorities set in the past and their own rather passive role in such matters. If I may personally generalize from this glance backward, I would say that, while education has benefited from most of the projects mounted, the priorities established have not always reflected the realistic constraints or potentials inherent in the research-development-knowledge utilization process, as it is understood by education R & D specialists. Nor has policy and allocation of funds for R & D in Education always reinforced those practices among R & D workers that conform to their own knowledge of the need for usable knowledge and the canons of technical procedure. To put it crudely, they have gone where the money was and taken turns or shortcuts they knew were unsound but which were necessitated by project guidelines. All of this leads me to predict that increased visibility and participation in policy deliberations on educational R & D will occur on the part of these technical experts in the near future in order to try to indicate those directions and procedures they think are most likely to yield the desired result--that is, improved educational practice. This will require them to present more of a consensus view than they have in the past. To achieve

this, however, they will need to devise and set in motion institutional arrangements not presently available to them.

Perhaps the most useful thing I can do in this background paper is to bring to the attention of people who must make policy recommendations for educational R & D some of the understanding of the research-development-knowledge utilization cycle held by the technical experts in this field and, in addition, to portray some possible strategies for setting R & D priorities. I choose this approach rather than to recommend specific priorities myself (in the absence of any arising from agreements among R & D experts in Education). I happen to believe that rather than actually choosing what R & D efforts in Education shall be conducted, the responsibility of governmental legislation and policy-making is to insure the public interest, in this case in R & D Education, through establishing appropriate procedures for getting decisions made regarding R & D priorities and then through facilitating the conduct of work in keeping with those priorities. Consequently, I would wish to set the task of making policy recommendations in a wider context than one of simply determining the public good from among competing R & D projects clamoring for government approval. I hope that what I present here will enable policy options to be considered in this wider context.

What Research & Development Can Produce

It is my contention that research and development activities in Education, though based on models of research and development in the basic and applied physical sciences, have been built upon misconceptions of what these processes actually entail. Furthermore, the field of Education differs so largely in its substantive dimensions and in its purposes from the Physical Sciences that modification of even correctly transferred understandings of these research and development processes is required. Without reciting the commonly held view of educational research and development, or trying in the context of this paper to defend the assertion that it is an inadequate one, let me proceed to set forth some distinctions that, in my view, contribute to a more accurate conception of research and development, one that also matches the unique requirements of a field of practical activity, such as Education.

Certain assumptions underlie the concepts to be presented here. One is that practice (in this case educational practice) must be informed by a certain kind of knowledge (insofar as it is informed by knowledge at all, rather than by superstition, intuition, or unsupportable dogma). Second, knowledge produced by the institutionalized processes of research and development comes in many forms, none of which is precisely the kind required by practice. Third, all forms of knowledge produced through research and development activities, however, are essential for the building of the kind of knowledge that can be used

in practice. An adequate conception of research and development, therefore, involves fixing the proper place and purpose of each of these kinds of knowledge in the total spectrum from knowledge creation to knowledge utilization.

Let us distinguish four types of knowledge that can be produced and used along the continuum from research to practice. Each serves a different purpose and is produced by different methods in the various stages of the research-development-utilization sequence. Starting with the kind most appropriate for the user in the day-to-day conduct of basic educational practice (teaching, curriculum development, administering, etc.) and moving toward the more remote (from the practitioner) forms produced through "basic" research, the list includes the following, with certain sub-types to be noted shortly:

1) Practical Knowledge
2) Technological Knowledge
3) Conjunctive Knowledge
4) Disciplined Knowledge

A brief explanation of each of these forms of knowledge will be given in order to provide a framework for the recommendations I will make regarding the kinds of research and development strategies that are most needed in education.

Disciplined Knowledge

Disciplined knowledge is the type yielded by the appropriate methods of inquiry within each of the various formal disciplines--for example, historical, psychological, sociological, anthropological, aesthetic,

philosophical, political, economic, and many others. Characteristic of these disciplines is their focusing upon discreet research questions which are formulated so as to permit knowledge claims to be made about them which can be unequivocally and objectively verified (ideally). It does little good to attempt research on questions where nothing conclusive can be asserted about them. To be as productive as possible, scholars using these disciplines usually are at liberty to investigate research hypotheses which they themselves formulate and which they believe can most readily be established or rejected given the data and the research methods available to them. Findings from this type of research come in the form of limited generalizations derived from a particular, independent study.

There is another form of knowledge which falls within the category of disciplined knowledge but which is produced, not by attacking a concrete question embedded in particular data, but by integrating or synthesizing the findings from all studies centering upon the same hypothesis or knowledge claim. This is an extremely important aspect of disciplined inquiry because widely generalizable conclusions cannot be drawn from but one or two studies which happen to concur in their findings. A third form of disciplined knowledge appears when whole series of related concepts and conclusions are constructed into a verifiable theory or system of thought that forms a continuing body of knowledge about a given phenomenon.

All of these disciplined forms of knowledge produced, it must be remembered, are the result of posing very special kinds of questions, which are governed exclusively by the demands of the methods of inquiry

adopted. The history of research shows that this approach is an exceptionally powerful mode of advancing knowledge and one that is basic to all others, but it is limited to those matters amenable to the tools of disciplinary inquiry. (See Gowin & Millman, 1969, for examples of disciplined studies in Education. Studies which have produced all four types of knowledge in Education are cited in Short, 1972.)

Conjunctive Knowledge

Conjunctive knowledge of educational phenomena is the result of combining disciplined knowledge from all the separate disciplined approaches and arranging it in intelligible patterns that accurately and comprehensively portray the phenomena. While attempts have been made to cast knowledge about education as a whole into a single framework, close examination of this work reveals that such efforts usually rest upon limited selection of available disciplined knowledge conjoined with various amounts of unfounded assertion--as yet unproven conjuctive theories, if you will. The same failure to tie available knowledge together validly into comprehensive schemes may be detected even in the several sub-domains of education where research is more easily related, those such as "the nature and aims of education," "curriculum design," "organization and policy," "teaching and instructional design," and "guidance and counseling."

Many conjunctive research scholars have concluded that full understanding of even these sub-domains of education will remain elusive until such time as clearer and more precise definition of these areas and their dimensions are created and more disciplined studies which can be related

to these frameworks are on hand. Thus, even the utility of studies done in the realm of disciplined research, as I have called it, depends in large measure upon how far conjunctive research has progressed in aligning what is known in fragmented form with ever-more valid conceptualizations of education and/or its sub-domains. That is, if there is no way to tie in disciplined knowledge to a conjunctive framework, such knowledge is useless, at least until a conjunctive conception is altered. This interaction between particular "knowns" and larger frames of reference into which they may be validly fitted is characteristic of all knowledge creation, whether conjunctive, disciplined, or otherwise. We must not minimize the difficulty researchers face in producing conjunctive knowledge of educational phenomena that will indeed be enduring and trustworthy.

Though educational research of the conjunctive type is often given less priority then the production of disciplined knowledge, having conjunctive knowledge that relates all we know about certain aspects of education is an indispensible link in utilizing the power of research to improve practice. Some scholars need to work in searching down findings from the many disciplines of inquiry that bear upon the same educational variables; others need to refine the variables themselves that constitute a conjunctive educational domain (or sub-domain) and provide the framework on which to place the findings from the first group.

Technological Knowledge

Technological knowledge is a third kind of knowledge generated by research and development activities. Developers, in particular, are

associated with this type of knowledge. Two forms of technological knowledge may be distinguished. One is general technological knowledge and the other particular technological products. Technology, in either of its knowledge forms (as contrasted with its hardware forms), is a body of facts and principles systematically related to a practical end. It provides strategic or operational guidelines for the achievement of particular goals of practical activity. It tells what to do in order to gain a result successfully or effectively. Technologies have been developed in relation to the need to know how to do or accomplish a wide variety of practical things. Each one, however, is designed to deal with a single, discreet end result, so that in the best tradition of knowledge validation it can be tested over and over and proven effective beyond doubt.

Once a technology has been established, its more general form can be utilized to generate any number of particular technological products whose make-up may vary from each other but all of which conform to the principles or rules set forth in the general technology. We are all familiar with these two forms of technology in the context of physical phenomena. The general design technology for inventing gasoline-powered automobiles is now widely understood. The technology required to produce particular instances of such cars is, however, as we all know, as diverse as the engineers' creativity. Yet all such product designs must partake of the proven general technology or they will not work. In the context of educational phenomena, we know many technologies that are in their general form capable of yielding predictable results. For example, there are technologies for measuring pupil achievement, technologies of

instructional design, technologies of behavior modification, etc. We know, in the case of each of these, many formulations of concrete tools that have been developed and used successful. Of course, there are a number of necessary educational methods and/or procedures which have not yet yielded to the rigors of technological research sufficiently, such that a valid controlling technology has been established. This work is even more difficult to produce than the technological knowledge necessary for designing an automobile. The many variables in an educational context are less easily controlled than the properties of metals and fuels, and we must hasten to add, the conjunctive and disciplined knowledge upon which educational technologies must be based are far less well developed than are the knowledge bases upon which automobile design depends (metalurgy, chemistry, and the conceptions of the desired capability wanted for a mobile vehicle).

A final note about technological knowledge, in education as in any field, must be added. Just because technologies have been developed that tell us how certain things <u>can</u> be attained under specific conditions, nothing in a technology can indicate whether it <u>should</u>, in fact, be employed or not. The dilemma automobile manufacturers are now facing, for example, over whether they should continue to utilize the known technology for producing gasoline powered cars or employ an alternative technology to achieve the same end another way is an instance of the neutral character of technological knowledge itself and of the need to bring to bear ethical and practical matters, in addition to technical capabilities, to the question of what <u>should</u> be done. Technologies

pertaining to the use of behavioral or competency objectives in designing instruction in schools is an instance of a similar dilemma in education. We have not yet determined whether their use is the most desirable alternative possible in achieving their intended result. Studies of the ethical and practical consequences of employing these, or any, technologies are necessary before we can choose wisely. Here we are back to the need for disciplined studies that relate conjunctive and technical knowledge in education. But these remarks foreshadow what must be said about practical knowledge, the last kind of knowledge to be distinguished in this overview of the research-development-utilization cycle.

Practical Knowledge

Practical knowledge is not a kind of knowledge that can be produced by institutionalized arrangements of research and development. It is distinguished by being situation bound. It is an action-oriented knowledge, whether the choices knowingly acted upon are made by individuals or by groups. What is valued or sought governs the action. The choice among possible alternative courses of action depends upon being conscious of the desired consequences actually preferred and knowing those technologies appropriate to their attainment. Since most practical goals, such as instructing in logical thinking, designing a curriculum to bring about habits of physical-emotional-mental health, or adopting staff development policies are goals that are exceedingly complex, and since their achievement consists not of applying a single technology but a series or mixture of several technologies, one who attempts to bring about these practical ends must select and combine a great deal of knowledge into

a proper mix (judge the best course of action). Experience in dealing with such situations is as important as adequate knowledge of principles or systems of guidelines (technologies) that bear upon aspects of the goal to be achieved.

It should not be implied from these statements that practical knowledge is purely subjective or the possession only of those who are highly experienced in a specific situation. Practical knowledge is capable of being validated just as any other kind of knowledge; the context is different--not general, but particular. The soundness of the knowledge and judgments made are tested by the consequences that follow. Some people clearly are more able than others to make the leap from what is known to what is sought and come out right. We call these people the professionals in any field of practical activity. The skill with which such people function depends, therefore, upon the availability of a repertory of tested technologies and their having had the training and experience necessary to make sound judgments more often than not.

If educational practitioners are to function with a high degree of expertize, we must make available the conceptual tools that will enable them to avoid operating on the basis of sheer guesswork and that will permit them to rely more fully on valid knowledge. These ideas, whether in the form of general technolcgical knowledge (technical manuals) or in the form of actual field-tested procedures or products engineered for use in a given situation, must come from research and development efforts. And it is from experienced practitioners that researchers and developers must obtain an understanding of the real problems and knowledge needs in

education to which the generation of new knowledge by R & D workers must be directed. What research questions are imperative to ask and which kinds of knowledge to seek are decisions to be made by R & D people not in isolation but in full communication with, and with the full support of, practitioners.

Concluding Remarks

What I have tried to convey in this section is a conception of research and development that recognizes the complexity of the research-development-knowledge utilization cycle. It is one that I am afraid neither practitioners nor researchers fully comprehend but which I believe must be grasped by all if the whole enterprise of improving practice through utilization of valid knowledge is to be achieved. Perhaps even more than the direct participants in this enterprise, R & D policy makers should see the essential components of this overall enterprise. All aspects of such a system are necessary and cannot be neglected. It is not possible simply to fund a given study and tomorrow "apply the findings" to a real problem of practice. Much more is involved, as we have seen. We must not be rushed into allocating funds for R & D with every "sure-fire" solution someone proposes. We can waste many dollars on development and tooling up for something that someone "believes", but does not necessarily "know", will move practice to a higher plane. The necessary scholarly work must be done before the "promotion pushes" and the "trying-the-same-thing-out-everywhere-syndrome" take precious resources. It is to policy issues like these that I wish now to turn, especially as they appear in connection with research and development in the field of education.

What Government Policy Makers Can Do

One form of practical knowledge is used in making sound personal decisions by professional practitioners; another form of practical knowledge is that necessary to make sound corporate or group decisions. Public policy decisions are of this second kind. Public policy decisions concerning R & D in Education would require, as suggested by my earlier analysis, a series of tested "technologies of R & D," which may be combined with prudent experience to assure the attainment of a goal to be realized--improved educational practice. Few public policy makers have a breadth of experience with R & D in Education. Their judgments must, therefore, rely heavily upon knowledge of R & D and how to do it that has been generated by technologists of R & D. The public policy makers' expertize will reside in their discerning the proper mix of the available technologies for creating various kinds of knowledge (as outlined in the first part of this paper) necessary to cope with the need for educational R & D, and in their discerning the public will, insofar as it wishes to commit its resources to the support of such work.

I wish that technological scholars who give attention to both technical and public interests in R & D in Education would generate alternative courses of action from their policy research so that policy makers could see clearly what options are before them. What I am about to offer here is not the result of pulling together tested technological knowledge of alternative policies that have been carefully formulated by scholars in this business. Unfortunately, little of this kind of policy research has been done at either the federal or state level. I can only offer

some tentative recommendations, hastily drawn together, based upon the perspective and the assumptions I have set forth in this paper. They are mine and are not necessarily those of others who labor as I do in the R & D field in Education.

Certain additional assumptions underlie the recommendations to be presented here. One is that no policy for R & D in Education should be set without first having accurate surveys of the knowledge needs of every brand of educational practitioner. We must ascertain what problems such people face for which they could use more valid professional knowledge. I am not aware of any systematic attempt to determine the knowledge needs of these people. We usually think of the matter in different terms: What problems need solving? I suggest that that approach lacks the careful analysis that would result from thinking in terms of types and forms of knowledge needed, which would be the type of information that would enable researchers and developers to gear up more readily to produce the needed knowledge. What I am saying here is that users of knowledge are the best source of information about the kind of knowledge they lack. If there is an imperative in this for policy making, it is that this kind of needs-assessment should be the foundation of policy making, rather than guess work, or political pressure from voices espousing their own special version of R & D priorities.

A second assumption is that the knowledge needs of professional practitioners in Education depend in large measure on the tasks the public sets for schools and teachers to accomplish. If they are rather limited in scope, practitioners just might learn to master the art of making sound professional judgments that focus on attaining those goals.

If, however, every decision faced represents a new kind of choice as to what is best to do, both experience and the necessary prerequisite knowledge will be insufficient to cope with the situation. Even with professional specialization that limits each person from having to cope with a very wide range of educational goals, a sense of uncertainty and inadequacy can result from a history of failure to gain confidence in attaining a complex set of school goals. The less expertize the public sees in the performance of educational practitioners the more they will clamor for results they didn't know they wanted. The implication of this second assumption is that R & D efforts will expand in proportion to the number of new and unfamiliar tasks laid on educational practitioners by the public, those for which the knowledge-base is neither present nor perhaps yet created.

A third assumption: Central to accomplishing whatever tasks are laid upon an educational institution is the problem of determining an appropriate curriculum by which students may acquire the education they deserve; therefore, R & D related to curriculum is the key to educational improvement. Faulty curricula cannot be overcome by expert teachers, effective administrators, or fancy buildings. No matter how valuable knowledge of every aspect of education may be, it is the quality of curriculum knowledge possessed by practitioners that winds up affecting what is embodied in a given educational program, and it is the quality of that program that largely determines whether a student will be able to obtain his education. I uphold the belief, therefore, that there is

a natural priority for R & D in creating practical, technological, conjunctive, and disciplined knowledge related to curriculum.

Having said this, I would further add that curriculum by its very nature requires some long-term continuity, rationale, and consistent implementation. One cannot rightly speak of having a curriculum if pieces get added or subtracted with every whim of policy makers or with every rise or fall of school funding. Nor is a curriculum truly a curriculum if its quality is not protected from the vagaries of every teacher-administrator-voter dispute or from inadequacies in teacher preparation and/or learning materials provided. I do not believe that adequate curriculum development can be mounted unless reasonable stability in the educational system exists. In most instances in this country at the present time, the twin crises in "control of education" and in "funding of education" must be solved before the curriculum can be expected to shoulder its responsibility. I am forced to assert that while R & D related to curriculum is central to achieving the educational task, it is critical now to work on R & D related to "control" and "finance" in order that practice in those areas may be stablized. We kid ourselves if we think that attending school no matter what the political or financial circumstances are, or however botched up the program may be, is educationally advantageous. Those who know young people and curriculum know this is far from true.

A fourth and final assumption underlying the recommendations to be made here has been touched upon in the introduction to this paper. It is that government's role in educational R & D should be strictly

facilitative rather than determinative. This position is derived from the fact that governments, at least in this country, are not constituted to determine objective truth, either technical or philosophical, but are designed chiefly to establish courses of action in problematic situations which are of concern to the body politic. Thus, the direction and conduct of foreign affairs, schooling, justice, health, welfare, military preparedness, and the like, are clearly issues upon which differences of opinion about the common good exist, and for which resolution by the forums and procedures of government are quite appropriate. But matters such as personal experience, aesthetic values, religious faith, expert knowledge, travel, communications, business, and the like, remain outside the immediate province of governmental activity, and enter into its responsibility only as these activities require regulation to assure that each realm has the opportunity to lay before the public mind its array of particular values in open and fair competition. I would classify the creation of knowledge through educational R & D as an activity which is not a candidate for possible direction and conduct at the will of the body politic. It is more like the other activities I have mentioned which, by their nature, must remain values on which no single corporate stand need, or indeed can, be taken, but which require protective and facilitative legislation from time to time.

Presented now are several specific guidelines for determining public policy on educational R & D. They follow from the conception of R & D and the assumptions outlined above, as I view policy needs.

Strategic Guideline One

A philosophy of government's role in educational R & D should be developed and promulgated through appropriate legislation in order that responsible government officials may have a definite governmental posture to stand on and defend, and to protect them from charges of misuse of power if they have faithfully adhered to the role statement.

a. The statement should clearly declare government's support of educational R & D and indicate its intention to facilitate the enterprise without at the same time determining the specific projects that are to be conducted.

b. The statement should define the scope and limits of governmental authority consistent with this basic stance.

c. The statement should establish a financial commitment to educational R & D which represents a standard with which budget projections can be compared: perhaps a percentage of total educational funds allocated by the particular level of government.

d. The statement should set a date at which time the legislation containing this governmental position should be terminated and brought up for possible revision: say after five years.

Strategic Guideline Two

A permanent secretariat, responsible for developing and implementing the role statement formulated, should be established by legislation, with appropriate duties, procedures, and offices specified.

a. It should have duties outlined consistent with the stated government's role in educational R & D.

b. It should serve within government circles as advocate for R & D and attempt to prevent any agency violation of the basic governmental stance.

c. It should serve the Education R & D community through regulatory standards designed to facilitate its organization, decision-making, and production of knowledge in the public interest.

d. It should complement its service duties with only one executive or enforcement responsibility--that is, to see that the activities of the Education R & D community comply with the R & D standards. (Perhaps through multi-faceted mechanisms much like those that now function to assure teacher quality in the schools.)

e. It should make provision for the development of these standards through the cooperation of R & D specialists in education, government officials, educators, and representatives of the public.

Strategic Guideline Three

The R & D community in Education should be granted financial assistance at each level (local, intermediate, state, regional, national) by appropriate governmental secretariats to establish its initial organization and procedure for self-government, for the determination of R & D priorities, for the identification of continuing sources of revenue for the support of research that will be funded, and for dissemination of the results of R & D work.

a. At the national level

1. The American Educational Research Association (AERA), the most widely representative organization of educational R & D specialists nationally, should be the recipient of assistance grants over a period of perhaps three years to plan internal mechanisms that will fulfill its part of the requirements set by the Standards in all the areas mentioned in this guideline.

2. This assistance should be restricted to support for the development of position papers and proposals (on alternative mechanisms), for the convening of conferences necessary for AREA to act on these items, and for limited staff assistance to the organization during this period of development.

3. The national government's secretariat should be the grantor at the national level and should mediate between the various levels of the R & D community wherever dimensions of the work set by each level appear to conflict.

b. At the regional level

1. A governmental body should be convened and constituted in each region to encourage and regulate educational R & D of special consequence to the people of each region.*

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*I do not know whether this kind of regional R & D activity at a level between the national level and the states is actually needed or not. The experience of the nationally created regional educational R & D laboratories suggests priorities may differ in a region from those of the country as a whole or of the various states. Nevertheless, the guidelines I propose here for national and state levels may be sufficient. Governmental authority and a revenue source are not now present in regions, so cooperative arrangements within the region may not be as stable or as convenient to maintain as those within conventional state or national control.

2. Such a body may be inaugurated and supported through the cooperative efforts of various State Departments of Education in a region or through other regional compacts, with the national secretariat again serving to assure appropriate jurisdictional lines are established.

3. Each regional body should establish goals and procedures like those outlined in Guidelines One and Two.

4. Each regional body should see that in its region a private R & D institution, made up of competent R & D scholars is created and structured to carry out tasks mentioned in Guideline Three.

5. Each regional body should grant financial assistance to this private institution during the period of its formation on a basis similar to that suggested for AERA.

c. At the state level

1. Each state secretariat should see that a comprehensive statewide private R & D institution, made up of competent R & D specialists in Education, is created and structured to handle responsibilities as outlined for the other levels, but at the state level.

2. This institution should be granted planning assistance by the state secretariat, as in the case of the other levels.

d. At the intermediate level

1. Each intermediate unit secretariat should help establish an organization at its level to perform the R & D jobs in Education appropriate to the needs within its boundaries.

2. This organization should be granted planning assistance by the intermediate unit secretariat, as in the case of the other levels.

e. At the local level

1. Each local district secretariat should establish a department of Educational R & D related to the district's educational operation, made up of those personnel qualified as R & D specialists in Education, and charged with R & D responsibilities commensurate with the needs of the district.

2. This department should be granted planning assistance by the local district secretariat, as in the case of the other levels.

Strategic Guideline Four

Each R & D institution, which has established its internal organization and procedures as per Guideline Three, and which has achieved appropriate functioning status according to the Standards envisioned in Guideline Two, should receive from its appropriate governmental secretariat unencumbered grants of money for allocation by each to specific "knowledge-producing" project applicants.

a. The monies available at the national level should be awarded each fiscal year to AERA, subject to yearly audit procedures set forth in the Standards, but should not be required to be spent by the close of specific fiscal years. (May be accumulated, allocated, and disbursed as needed.) Similar discretion may be permitted at other levels, except where a grant source is small and projects can easily be completed within specified fiscal periods.

b. The national secretariat should always grant the monies available for actual R & D studies each year to AERA except where evidence from periodic reviews of compliance with the Standards shows failure to live up to the Standards set. The power to withhold funds in such cases should motivate AERA to keep its machinery functioning properly. Funds should not be withheld simply because the secretariat does not agree with AERA's apportionment of funds to various projects. Elements of the Standards should contain sufficient safeguards to satisfy the public interest.

c. Similar review procedures should be followed at levels other than the national, by their respective governmental secretariats, in order to show cause for withholding any funds from any R & D unit.

d. The national secretariat should periodically compile and report data on the total range of R & D work being conducted at every level, and the proportion of funds, by level and totally, going into disciplined, conjunctive, technological, and practical studies, and by areas of education, going into studies of curriculum, of school support, of school control, of guidance, of instruction, of administration, etc. This data should be utilized by decision-makers in the various R & D institutions to help determine their priorities and allocations.

e. This guideline clearly implies the principle that funds should be spent by an R & D institution at the same level as the source of funds. The national secretariat, for example, grants no monies to units at lower levels, nor does any other level secretariat deal with R & D units at levels other than its own. This should not be interpreted to mean that an R & D unit cannot seek additional funds other than the government funds they automatically receive.

Strategic Guideline Five

A comprehensive system by which knowledge created in its various forms can be communicated readily to all who need it for practical use or for further scholarly adaptation should be established.

a. Each level of governmental secretariat can play a role in designing, implementing, and supporting this comprehensive information system for educational R & D.

b. The provision of this kind of open knowledge dissemination service through the good offices of government is well suited to the requirement that substantive neutrality on R & D issues in Education be maintained by government while at the same time fostering the work of an essential component of life. In fact, if government does not do it, information dissemination and the necessary communication among scholars and between them and practitioners remains quite haphazard. No profit incentive exists in this realm such that private ventures can be expected to conduct this system. The chief mechanism presently operating is that of the scholarly or professional journal, the major support for which is the subscription payments of the very researchers who contribute the reports published in them and who are almost never given any renumeration for having their work published. The limitation on communication of knowledge by this method is extraordinary. Support for the publication of journals and for other means of knowledge transfer, as well as the development of document retrieval systems such as ERIC and CIJE, should be part of the overall knowledge flow system that should be devised and conducted on behalf of the public welfare—the exchange of valid knowledge and information.

Strategic Guideline Six

Nothing should be done by way of public policy decisions for educational R & D that would lead to a diminishing of effort that has to be given to studies related to the on-going operation of particular school systems or programs.

a. R & D is not the same as, or a substitute for, ordinary research or evaluative studies required to develop policies, procedures,

or programs in a given situation. These are classified as decision-oriented studies.

b. R & D work always aims at "understandings" rather than at "solutions" or "courses of action," and, if conducted, require separate budget support from that to be spent for institutional research, the development of plans and procedures, and other operations.

Concluding Remarks

Incorporated in the policy strategy suggested by the six guidelines above are really four basic steps that need to be undertaken on behalf of R & D in Education by government policy makers. They are:

1. The formulation and passing of enabling legislation at various levels which will encourage, indeed require, R & D experts to exercise their duty to determine priorities, and conduct studies accordingly, on a much more systematic and responsive basis than is the case now where government is often both patron and determiner of what gets done.
2. The convening of conferences at each level to set Standards by which government shall regulate the affairs of the R & D community in the public interest.
3. The granting of limited financial assistance to the designated R & D body at each level for an initial period for tooling up to carry out decision-making on what R & D projects shall be recipients of funding.
4. The granting of undesignated funds on a routine basis to these units for their allocation to projects to be conducted.

If action along these lines is forthcoming, it is my judgment that Education can expect to feel an increased impact from the efforts of the technical experts in R & D in Education.

Summary

There will continue to be research and development activity in Education with or without sound R & D policy-making on the part of government. I have tried to indicate how important it is to develop and implement new governmental policies in this area which are in line with the actual needs of R & D specialists in Education and with the concerns of the public sector for improved educational practice. I have tried to demonstrate the complexity of the problem as seen from the point of view of a technical expert in educational R & D. I have not offered any insights regarding the point of view of the public. I have, however, projected a strategy that I believe preserves the public interest in this matter while at the same time reserves to the expert R & D specialists those decisions and those technical activities only they can adequately make and carry out. These include the determination of the knowledge needs of the Education profession, the identification and generation of the technologies that need urgently to be developed to meet these needs, the delineation of the conjunctive knowledge and the disciplined knowledge needed farther back in the knowledge-producing cycle upon which to base these technologies, and finally the opportunity to control the allocation of resources and thereby actually conduct those studies determined to be most essential. In all this, a new less directive, more facilitative role for government in educational R & D has been set forth and defended. The acceptance of all else I have recommended rests on the acceptance of this view of government's role. In weighing the strategy proposed here against all other alternatives, this view must be seen as basic to whatever merit the strategy has.

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